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ABSTRACT

The present study focuses on two major questions. First, how often are potentially reinforcing behaviors emitted by teachers in naturally occurring classrooms? Second, what is the relationship between the display of potentially reinforcing behaviors by the teacher and the task-orientation of randomly selected students in the classrooms. Students and teachers in four middle-school classrooms were observed for five class periods over a three-week period. One observer watched the teachers' facial, physical and verbal behaviors every 10 seconds and coded the behaviors as being positive, negative, or neutral. The other observer watched each student in the room for 10 seconds and coded the behavior as being task-oriented or non-task-oriented. The results indicated that an overwhelming percentage of teacher behaviors were "neutral" in nature. In addition, there was no relationship between teachers' use of potentially reinforcing behaviors and student task-oriented behavior. Implications for classroom instruction are presented. (Author)

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TEACHERS' USE OF POTENTIALLY REINFORCING BEHAVIORS AND STUDENTS' TASK-ORIENTED BEHAVIOR

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Teachers' Use of Potentially Reinforcing Behaviors
Students' Task-Oriented Behavior

One of the major problems facing classroom teachers is how to gain and maintain their students' involvement in learning tasks. Theorists and researchers, alike, have advocated the use of reinforcement as one means of increasing the amount and degree of student involvement in learning. These advocates suggest that control of student behavior can be achieved through the teacher's provision (or withholding) of reinforcers following the appearance of desirable (or undesirable) behaviors on the part of the student. Several studies (Becker et al., 1967; Madsen et al., 1968; O'Leary and Drabman, 1971) have supported this position. Three characteristics of these studies are especially noteworthy. First, the reinforcers used in the studies ranged from teacher praise to material incentives to tokens. Second, the studies were carefully controlled experimental laboratory studies, usually involving a single teacher and a small number of "target" pupils. Third, the dependent variable was most frequently disruptive behaviors.

The typical classroom stands in contrast to the setting in which these experimental studies were conducted. Most of the reinforcers used by teachers are in the form of reinforcing behaviors (e.g., smiles, praise, "pats on the back"), rather than tokens or material incentives. More importantly,teachers often are unaware of individual student behaviors. Rather, teachers "behave" toward an entire class of learners.

Even when reinforcing behaviors are directed toward particular students, other students in the class are often aware of the reinforcers being provided. As Dunkin and Biddle (1974) write, "pupils are more likely to witness classroom reinforcement than they are to experience it personally" (p. 166). Bandura (1969)

has used the phrase "vicarious reinforcement" to refer to the effect on the behavior of the observer of observing reinforcers being given to others. Consequently, the behaviors emitted by the teacher, which have traditionally been viewed as having some reinforcement value, can best be described as "potentially reinforcing behaviors."

In light of the above discussion, the present study focuses on two major questions. First, how frequently are potentially reinforcing behaviors emitted by teachers in naturally occurring classrooms? Second, what is the relationship between the display of potentially reinforcing behaviors by the teacher and the task-orientation of the randomly selected students in the classrooms?

Method

Sample

The sample consisted of middle school age students in four classrooms attending a summer school program in an urban school. The classes were selected on the basis of the recommendations of the building principal and the willingness of the teachers to be observed. Approximately fifteen students were in each classroom. Approximately one-third of the students were black; two-thirds were white. Approximately half of the students were boys and half were girls. Twelve students in each of the four classes were chosen to be observed on the basis of the students' visibility to the observer. One teacher was in charge of each classroom. All four teachers were white females.

Procedure

Students and teachers were observed for five class periods over a three week period. Two observers were present in the classrooms. The same two observers were used for the entire study. The first observer watched the teachers' facial, physical and verbal behaviors every ten seconds and coded the behaviors within

each category as being positive (e.g., smile, pat on the back, or praise), negative (e.g., frown, grasping the student by the shoulders, or criticism), or neutral. The categories are more fully described in Table 1.

Insert Table 1 About Here

The second observer watched each student in the room for ten seconds and coded the behavior as being task-oriented or non-task-oriented. Three categories of task-oriented behaviors were used: "attention," "work," and "other." "Attention" was coded if the student was displaying "eyes on" behavior. "Work" was coded if the student was writing or reciting. "Other" was coded if the student was working with other students or the teacher on assignments or problems. The students were observed in a random order with every student being "re-observed" every two minutes. The random observations of students helped to insure that the teacher behaviors were, in fact, potentially reinforcing behaviors.

Observer agreement with respect to both of the observation instruments was obtained prior to the study using a device suggested by McQueen (1975). Both observers used the observation instruments in several classrooms of a comparable nature to the classrooms used in the study. The observer agreement for the student behavioral observation instrument was 93 per cent. For the teacher behavioral observation instrument, the observer agreement was 80 per cent.

The observation scheme allowed for the coordination of the two sets of observations. Every ten seconds the teacher behavior was coded as positive, negative and neutral in the three areas (facial, physical and verbal) and a student's behavior was coded as task-relevant or non-task-relevant. Through this coordination of observations, the relationship between teacher behaviors and the behaviors of randomly selected students could be examined.

Results

The first question concerned the frequency of potentially reinforcing behaviors in naturally occurring classrooms. Positive teacher behaviors of any kind (e.g., physical, verbal or facial) occurred approximately six per cent of the time on the average. Teacher 1 exhibited positive behaviors approximately two per cent of the time; Teacher 2, approximately three per cent of the time; Teacher 3, approximately eighteen per cent of the time; and, Teacher 4, approximately four per cent of the time. Negative teacher behaviors occurred approximately two per cent of the time on the average. Thus an overwhelming percentage of teacher behaviors were "neutral" in nature. These findings are quite similar to those of other classroom observational studies (Altman, 1970; Dahloff and Lundgren, 1970; Tisher, 1970; Randhawa, 1977; Hillman and Davenport, 1977).

The second question concerned the relationship between teachers' use of potentially reinforcing behaviors and student task-oriented behavior. Despite the infrequency of teacher potentially reinforcing behaviors in the classroom, it was decided to investigate the second question although realizing the small frequencies of potentially reinforcing behaviors made obtaining a significant result very difficult. The data were analyzed separately for each teacher. Contingency tables displaying the data pertaining to this question are presented in Tables 2 through 5.

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Insert Tables 2 Through 5 About Here
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As readily can be seen, none of the Chi-square statistics computed for any of the contingency tables were significant. Thus, there was no relationship between teachers' use of potentially reinforcing behaviors and student task-oriented behavior in the present study.

The investigation of the first question indicated that one of the teachers spent considerably more of her time involved in positive behaviors. Based on this observation, a decision was made to investigate the significance of these differences in positive teacher behaviors. The design for this investigation was conceptualized as a two-way (teacher x occasion) fixed effect model with one observation per cell. The results pertaining to the investigation are presented in Tables 6 and 7.

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Insert Tables 6 and 7 About Here
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Table 6 presents the number of positive teacher behaviors for each teacher on each of the five occasions. In addition, Table 6 presents the means and standard deviations of the number of positive teacher behaviors for each teacher across all occasions and for each occasion across all teachers.

Table 7 presents the results of the analysis of variance procedures that were used to test the significance of the differences. As can be seen, there is a significant teacher effect ($F = 23.8$, $p < .001$). Subsequent Tukey comparisons indicated that Teacher 3 exhibited significantly more positive behaviors than Teachers 1, 2 and 4. There were no other significant differences between any of the remaining teacher pairs.

On the basis of this finding, a decision was made to examine whether Teacher 3's students also exhibited significantly more task-oriented behaviors than the students in the other classes. The results pertaining to this investigation are presented in Tables 8 and 9.

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Insert Tables 8 and 9 About Here
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Table 8 presents the per cent of student behaviors that were non-task-

oriented in each classroom on each of the five occasions. In addition, Table 8 presents the means and standard deviations of the student non-task-behaviors for each teacher across all occasions and for each occasion across all teachers.

Table 9 presents the results of the analysis of variance procedures that were used to test the significance of the differences. Significant differences among teachers in the per cent of time their students were engaged in task-relevant behaviors were found ($F = 8.7$, $p < .05$) were found. Subsequent Tukey comparisons indicated that Teacher 3's students were on-task significantly more than Teacher 1 and Teacher 4's students, but not Teacher 2's students.

In summary, results presented in Tables 6 through 9 suggest that Teacher 3, in comparison with Teachers 1 and 4, exhibits more positive behaviors and has students who spent a greater percentage of their time engaged in task-oriented behaviors.

Conclusions and Implications

Two major conclusions follow directly from the research. First, teachers exhibit positive and negative behaviors very infrequently in classrooms. The vast majority of teacher behaviors in classrooms can be termed "unemotional". If the results of laboratory experimental studies actually hold in the classroom, one of the problems facing teacher educators is to get teachers to use reinforcing behaviors in the classroom.

Second, teachers' use of potentially reinforcing behaviors was found to be unrelated to student task-orientated behaviors. That is, students exhibited approximately the same number of task-oriented behaviors when teachers were exhibiting positive behaviors as when they were not. One of the reasons for the lack of significant relationship may have been the small number of such teacher behaviors. Another reason, however, may have to do with the relation-

ship of reinforcing behaviors to the total teaching style of the teacher. Perhaps, the effectiveness of potentially reinforcing behaviors is not a "within teacher" phenomenon. That is, teachers should not expect more task-oriented behavior when they exhibit reinforcing behaviors than when they do not exhibit those behaviors. Rather, the effectiveness of potentially reinforcing behaviors is an "across teacher" phenomenon. That is, teachers who incorporate reinforcing behaviors as a part of their total teaching style may expect to have more student task-oriented behaviors than teachers who do not incorporate these behaviors.

Further investigations are needed to investigate this tentative conclusion. If further studies are supportive, the implications for teacher education are clear. Teacher training programs should work toward developing teachers with a cluster of related teaching skills and behaviors, emphasizing the integration of the skills. Teacher training programs should not work toward the development of hundreds of separate competencies which may, or may not, have a great deal of relationship to one other.

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Table 1

Categories of Teacher Verbal, Facial and Physical Behaviors

TYPE	DESCRIPTION	EXAMPLES
VERBAL		
positive	The teacher makes a positive statement to a student or students regarding academic or social behaviors.	Good, fine
negative	The teacher makes a negative statement to a student or students regarding academic or social behaviors.	Stop that! That's not correct!
neutral	The teacher makes a neutral statement to a student or students regarding academic or social behaviors.	Time to start language, here are your test papers.
FACIAL		
positive	_____	Smiles
negative	_____	Frowns
neutral	No discernible facial expression.	_____
PHYSICAL		
positive	In close proximity to a student or students the teacher engages in a motor behavior which was helpful or positive.	Pat on back, helping student find correct page.
negative	In close proximity to a student or students the teacher engages in a motor behavior which was unpleasant or negative.	Forcefully grasping student by shoulders, forcefully taking book from student.
neutral	In close proximity to a student or students, the teacher engages in a motor activity which was neither positive nor negative.	Passing out papers, writing on board, walking around room.

Note--In the case of verbal behaviors, the tone of voice usually helped differentiate positive, negative, and neutral statements. In the case of physical behaviors, any physical movement which did not involve the students directly was not recorded. Such activities would include swinging ones leg while seated or correcting papers at ones desk.

Table 2

Two-way contingency table for type of teacher behavior and type of student behavior

(Teacher 1)

	Teacher neutral	Teach r positive	Teacher negative
Student on-task behaviors	447	10	1
Student off-task behaviors	119	2	2

$chi^2 < 1$, df = 2, $p > .05$

Table 3

Two-way contingency table for type of teacher behavior and type of student behavior (Teacher 2)

	Teacher neutral behaviors	Teacher positive behaviors	Teacher negative behaviors
Student on-task behaviors	463	3	13
Student off-task behaviors	104	0	2

$chi^2 < 1$, df = 2 $p > .05$

Table 4

Two-way contingency table for type of teacher behavior and type of student behavior

(Teacher 3)

	Teacher neutral behaviors	Teacher positive behaviors	Teacher negative behaviors
Student on-task behaviors	452	100	4
Student off-task behaviors	25	5	1

$chi^2 < 1$, df = 2, $p > .05$

Table 5

Two-way contingency table for type of teacher behavior and type of student behavior

(Teacher 4)

	Teacher neutral behaviors	Teacher positive behaviors	Teacher negative behaviors
Student on-task behaviors	353	15	5
Student off-task behaviors	190	9	6

$chi^2 < 1.$, $df = 2$, $p > .05$

Table 6

Number of Teachers Behaviors That Were Positive Behaviors

Across Teachers and Occasions

	Tchr. 1	Tchr. 2	Tchr.3	Tchr. 4	Mean	S. D.
Occ. 1	2	0	15	9	6.5	6.8
Occ. 2	0	3	22	5	7.5	9.9
Occ. 3	3	0	13	3	4.8	5.7
Occ. 4	3	0	24	6	8.2	10.8
Occ. 5	4	0	31	1	9.0	14.8
Mean	2.4	0.6	21.0	4.8		
S. D.	1.5	1.3	7.2	3.0		

Table 7

Two-way analysis of variance (teacher x occasion) with teacher use of positive behaviors as the dependent variable

Source	df	MS	F	Significant level
Teacher (T)	3	437.7	23.8	.001
Occasion (O)	4	10.9	< 1	ns
T x O	12	18.4		

Table 8

Per Cent of Student Time Off-Task Across

Teachers and Occasions

	Tchr. 1	Tcr. 2	Tcr. 3	Tcr. 4	Mean	S. D.
Occ. 1	35	30	5	27	24.2	13.2
Occ. 2	29	5	8	25	16.8	12.0
Occ. 3	20	16	2	35	18.2	13.6
Occ. 4	17	13	10	55	23.8	21.0
Occ. 5	16	26	1	39	20.5	16.0
Mean	23.4	18.0	5.2	36.2		
S. D.	8.3	10.1	3.8	12.0		

Table 9

Two-way analysis of variance (teacher x occasion) with student time off-task as the dependent variable

Source	df	MS	F-value	Significance Level
Teacher (T)	3	825.1	8.71	.05
Occasion (O)	4	43.6	<1	ns
T x O	12	94.7		